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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/898,402	07/03/2001	Stuart A. Kingsley	D597.4	2184
27734	7590	02/11/2004	EXAMINER	
PHILIP J. POLLICK P.O. BOX 141510 COLUMBUS, OH 43214-6510			GIBSON, ROY DEAN	
		ART UNIT		PAPER NUMBER
		3739		2
DATE MAILED: 02/11/2004				

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No.	Applicant(s)
	09/898,402	KINGSLEY ET AL. <i>CN</i>
Examiner	Art Unit	
Roy D. Gibson	3739	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) Responsive to communication(s) filed on 03 July 2001.
- 2a) This action is FINAL.                    2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) Claim(s) 1-66 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) Claim(s) \_\_\_\_\_ is/are allowed.
- 6) Claim(s) 1-3,5,6,8-12,14-19,21,23-25,27-35,50,53,59,60,62 and 63 is/are rejected.
- 7) Claim(s) 4,7,13,20,22,26,36-49,51,52,54-58,61 and 64-66 is/are objected to.
- 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on \_\_\_\_\_ is/are: a) accepted or b) objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. §§ 119 and 120

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) All    b) Some \* c) None of:  
1. Certified copies of the priority documents have been received.  
2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

- 13) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.  
a) The translation of the foreign language provisional application has been received.
- 14) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                  | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____  |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)         | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ | 6) <input type="checkbox"/> Other: _____                                    |

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## DETAILED ACTION

### ***Claim Rejections - 35 U.S.C. § 112***

Claims 31 and 32 are rejected under 35 U.S.C. 112, second paragraph, as being identical or duplicate claims.

### ***Claim Rejections - 35 U.S.C. § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-3, 5, 8-12, 17-19, 21, 23-25, 27-35, 50, 53, 59, 60 and 62-63 are rejected under 35 U.S.C. 102(b) as anticipated by Cox et al. (5,287,212).

As to claims 1-3, 5, 8-12, 17-19, 21, 23, 24, 27-28 and 59-60, Cox et al. disclose an optical "electrode" (note that the structure is the same as claimed) comprising:

- a) a light source (10) in the form of a diode (semiconductor) laser (inherently a typical highly coherent laser);
- b) an electro-optical modulator (optical phase-shift modulator or Mach-Zehnder type modulator # 14 and inherently enclosed in a hermetically sealed and grounded housing) connected to the light source via an optical fiber (12) and which inherently comprises an optical carrier: capable of
  - 1) receiving light from the light source;

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2) modulating the light in response to an input potential (a bio-potential is intended use only);

3) providing a modulated light output proportional to the input potential;

c) further comprising a photodetector (22) for receiving and converting the modulated light output (via an optical fiber 20) to an electrical output or signal or voltage and electronic circuitry in the receiver (24) for processing the electrical output from the photodetector and providing an electronic output signal (col. 4, line 49-col. 5, line 66, col. 6, lines 20-50, col. 7, lines 28-43 and col. 10, lines 20-27).

As to claims 29-35, Cox et al. further disclose the M-Z interferometer operates in a linear region and is configured as claimed (Figure 3) wherein the substrate is crystalline and composed of LiNbO<sub>3</sub> (col. 6, lines 27-50).

As to claims 62-63, Cox et al. further disclose the electronic circuitry comprises amplification circuitry (col. 10, lines 19-26) and inherently filtering circuitry can be used as required.

### ***Claim Rejections - 35 U.S.C. § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

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(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Cox et al. in view of Taylor (6,359,716). Cox et al. disclose the light source is a diode pumped Nd:YAG laser or a semiconductor laser, but lacks the disclosure of a distributed feedback laser (DFB). But, Taylor discloses an optical link with a similar application with a DFB laser used as the light source, thus teaching an alternative equivalent (col. 2, line 44-col. 3, line 6).

Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Cox et al. in view of Kirk et al. (6,356,680). Cox et al. disclose the light source is a diode pumped Nd:YAG laser or a semiconductor laser, but lacks the disclosure of a Fabry-Perot laser. But, Kirk et al. disclose an optical link with a similar application with a Fabry-Perot laser used as the light source, thus teaching an alternative equivalent (Figure 4 and col. 4, lines 26-32).

Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over Cox et al. in view of Hahn et al. (5,359,447). Cox et al. disclose the light source is a diode pumped Nd:YAG laser or a semiconductor laser, but lacks the disclosure of a vertical cavity surface-emitting laser (VCSEL). But, Hahn et al. disclose an optical link with a similar application with a VCSEL used as the light source, thus teaching an alternative equivalent (col. 4, lines 12-39).

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Claims 5-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cox et al. in view of Seino (5,995,685). Cox et al. lack the disclosure of an optical splitter for splitting the light from the light source into a second light portion. But, Seino discloses an optical communication link with a light splitter (Figure 10) in which the second light portion is intensity modulated by a second electro-optical modulator and contains a DC component, and whereby the DC component is suppressed by the interference of the two beams to achieve a modulated signal with a high extinction ratio (Figures 16A and B, col. 1, lines 5-55 and col. 9, lines 36-col. 11, line 7). Therefore, at the time of the invention, it would have been obvious to one of ordinary skill in the art, to modify the link of Cox et al, as taught by Seino, to achieve a modulated optical with a high extinction ratio.

***Allowable Subject Matter***

Claims 4, 7, 13, 20, 22, 26, 36-49, 51, 52, 54-58, 61 and 64-66 objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

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### **Conclusion**

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Kingsley et al. (6,479,979) disclose an O-E device for measuring the RMS value of an AC voltage (commonly owned by applicant); Ball et al. (6,370,290) disclose an integrated wave-length-select transmitter with a diode laser source (a teaching for a 103 rejection of claim 11 above); Ho et al. (6,341,184) disclose a low drive voltage modulator which utilizes a M-Z interferometer; Schaffner et al. (5,751,867) disclose a polarization-insensitive E-O modulator including a M-Z interferometer; Yakymyshyn et al. (5,739,936) disclose an E-O circuit for signal transmission with two optically modulated paths and whereby the DC current components of each are canceled at the photodetector by being in anti-phase relationship; and Funaki (5,687,018) discloses a receiving system with a laser and E-O modulator wherein the laser output is controlled by a feedback from the photodetector.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Roy Gibson whose telephone number is (703) 308-3520. The examiner can normally be reached on Monday-Friday from 9 am - 4 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ms. Linda Dvorak, can be reached on (703) 308-0994. The fax phone number for this Group is (703) 872-9306.

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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 308-0858.

January 20, 2004

  
Roy Gibson  
Patent Examiner  
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